

TRANSMITTAL LETTER TO THE UNITED STATES  
 DESIGNATED/ELECTED OFFICE (DO/EO/US)  
 CONCERNING A FILING UNDER 35 U.S.C. 371

Attorney's Docket Number

05725.0481

U.S. Application No.

09/402796

International Application. No.	International Filing Date	Priority Date Claimed
PCT/FR98/02863	December 23, 1998	February 13, 1998

**Title of Invention:**

COSMETIC COMPOSITION COMPRISING AT LEAST ONE NONIONIC AMPHIPHILIC ASSOCIATIVE POLYURETHANE  
 AND AT LEAST ONE ANIONIC POLYMER WITH FATTY CHAINS (As Amended)

**Applicant(s) For DO/EO/US:**

Christine DUPUIS

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US)  
 the following items and other information:

1. ☒ This is a FIRST submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371.
3. ☐ This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☐ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
  - a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
  - b. ☒ has been transmitted by the International Bureau.
  - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3)).
  - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
  - b. ☐ have been transmitted by the International Bureau.
  - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
  - d. ☒ have not been made and will not be made.
8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. below concern other document(s) or information included:

11. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☒ A FIRST preliminary amendment.
  - ☐ A SECOND or SUBSEQUENT preliminary amendment.
14. ☐ A substitute specification.
15. ☐ A change of power of attorney and/or address letter.
16. ☐ Other items or information:
  - a. ☐ Verified Small Entity Statement.
  - b. ☐ Copy of Notification of Missing Requirements.

17. [X] The following fees are submitted:

CALCULATIONS

**Basic National Fee (37 CFR 1.492(a)(1)-(5)):**

Search Report has been prepared by the EPO or JPO.....\$840.00

International preliminary examination fee paid to

USPTO (37 CFR 1.482).....\$670.00

No international preliminary examination fee paid to

USPTO (37 CFR 1.482) but international search fee

paid to USPTO (37 CFR 1.445(a)(2)).....\$760.00

Neither international preliminary examination fee

(37 CFR 1.482) nor international search fee

(37 CFR 1.445(a)(2)) paid to USPTO.....\$970.00

International preliminary examination fee paid to USPTO

(37 CFR 1.482) and all claims satisfied provisions

of PCT Article 33(1)-(4).....\$ 96.00

**ENTER APPROPRIATE BASIC FEE AMOUNT****= \$ 840.00**

Surcharge of \$130.00 for furnishing the oath or declaration later than

[ ] 20 [ ] 30 months from the earliest claimed priority date

(37 CFR 1.492(e)).

\$

Claims	Number Filed	Number Extra	Rate	
Total Claims	22 -20=	2	X \$18.00	\$ 36.00
Independent Claims	4 - 3=	1	X \$78.00	\$ 78.00
Multiple dependent claim(s) (if applicable)			+\$260.00	\$

**TOTAL OF ABOVE CALCULATIONS****= \$ 954.00**

Entity statement by 1/2 for filing by small entity, if applicable. Verified

Entity statement must also be filed. (Note 37 CFR 1.9, 1.27, 1.28)

\$

**SUBTOTAL****= \$ 954.00**

Surcharge of \$130.00 for furnishing the English translation later

[ ] 20 [ ] 30 months from the earliest claimed priority date

(37 CFR 1.492(f)).

\$

+

**TOTAL NATIONAL FEE****= \$ 954.00**

or recording the enclosed assignment (37 CFR 1.21(h)). The

assignment must be accompanied by an appropriate cover sheet

(37 CFR 3.28, 3.31).

\$40.00 per property

+

**\$ 954.00****TOTAL FEES ENCLOSED****= \$**Amount to be  
refunded

\$

charged

\$

[X] A check in the amount of \$ 954.00 to cover the above fees is enclosed.

[ ] Please charge my Deposit Account No. \_\_\_\_\_ in the amount of

\$ \_\_\_\_\_ to cover the above fees. A duplicate copy of this sheet is enclosed.

c. [X] The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 06-0916. A duplicate copy of this sheet is enclosed.

The Commissioner is hereby authorized to charge any other fees due under 37 C.F.R. §1.16 or §1.17 during the pendency of this application to our Deposit Account No. 06-0916.

SEND ALL CORRESPONDENCE TO:  
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Submitted: October 12, 1999

09/402796  
514 Rec'd PCT/PTO 12 OCT 1999

PATENT  
Attorney Docket No. 5725.0481-00

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re National Stage Application of )  
PCT/FR98/02863 )  
Inventor: Christine DUPUIS )  
Serial No.: To be assigned ) Group Art Unit: To be assigned  
PCT Filing Date: December 23, 1998 ) Examiner: To be assigned  
National Stage Entry: October 12, 1999 )  
For: COSMETIC COMPOSITION COMPRISING )  
AT LEAST ONE NONIONIC AMPHIPHILIC )  
ASSOCIATIVE POLYURETHANE AND AT )  
LEAST ONE ANIONIC POLYMER WITH )  
FATTY CHAINS (As Amended) )

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

**PRELIMINARY AMENDMENT**

Prior to the examination of the above application, please amend this application  
as follows:

**IN THE TITLE:**

Please amend the title to read: --COSMETIC COMPOSITION COMPRISING AT  
LEAST ONE NONIONIC AMPHIPHILIC ASSOCIATIVE POLYURETHANE AND AT  
LEAST ONE ANIONIC POLYMER WITH FATTY CHAINS--.

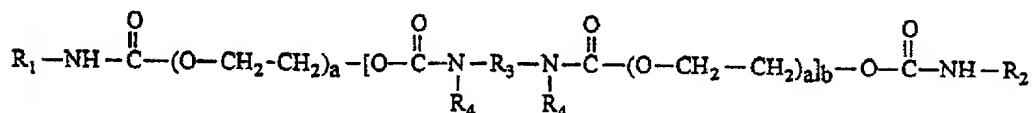
**IN THE CLAIMS:**

Please cancel claims 1-15 without prejudice or disclaimer.

Please add the following new claims 16-37:

- 16. A cosmetic composition comprising, in a cosmetically acceptable medium,  
(A) at least one nonionic amphiphilic associative polyurethane

corresponding to formula (I):



(I)

in which

one of the radicals  $R_1$  and  $R_2$  is an alkyl group having 8 to 18 carbons and  
the other group is an alkyl group having 1 to 6 carbons,

$R_3$  is a hydrocarbon-based radical having from 4 to 36 carbons,

$R_4$  is chosen from hydrogen and  $C_1$ - $C_6$  alkyl radicals,

$a$  and  $b$  are integers, independently, from 90 to 600, and

b ranges from 1 to 4, and

(B) at least one anionic polymer comprising at least one fatty-chain monomer unit.

17. The composition according to claim 16, wherein  $R_3$  has from 6 to 10 carbons.

18. The composition according to claim 16, wherein  $R_4$  is a hydrogen atom

19. The composition according to Claim 16, wherein the alkyl group having from 8 to 18 carbons is an octadecyl group and the alkyl group having from 1 to 6 carbons is a methyl group.

20. The composition according to claim 19, wherein the at least one nonionic amphiphilic associative polyurethane of formula (I) having the octadecyl group and the methyl group is obtained by polycondensation of hexamethylene diisocyanate and polyethylene glycol.

21. The composition according to claim 16, wherein the at least one nonionic amphiphilic associative polyurethane of formula (I) is in a solution or suspension in water, which also contains chemically, enzymatically or microbiologically modified soluble starch.

22. The composition according to claim 16, wherein the at least one anionic polymer comprising at least one fatty-chain monomer unit comprises at least one unit

that is derived from carboxylic acids, phosphonic acids, sulphonic acids, or mixtures thereof.

23. The composition according to claim 22, wherein the carboxylic acids are chosen from acrylic acids, methacrylic acids, crotonic acids, maleic acids, fumaric acids and itaconic acids.

24. The composition according to claim 22, wherein the phosphonic acids are chosen from vinylphosphonic acid and styrenephosphonic acid.

25. The composition according to claim 22, wherein the sulphonic acids are chosen from vinylsulphonic acid and styrenesulphonic acid.

26. The composition according to claim 16, wherein the at least one anionic polymer comprises at least one fatty chain that is derived from monomers comprising at least one linear or branched C<sub>8</sub>-C<sub>22</sub> alkyl chain.

27. The composition according to claim 26, wherein the at least one linear or branched C<sub>8</sub>-C<sub>22</sub> alkyl chain is chosen from C<sub>8</sub>-C<sub>22</sub> alkyl acrylates or methacrylates, and vinyl esters of higher C<sub>8</sub>-C<sub>22</sub> fatty acids.

28. The composition according to claim 16, wherein the at least one anionic polymer comprising at least one unit derived from a fatty-chain monomer also contains at least one nonionic unit.

29. The composition according to Claim 28, wherein the at least one nonionic unit is derived from monomers chosen from vinyl monomers, olefinic monomers, styrene monomers, acrylic monomers, and methacrylic monomers.

30. The composition according to claim 16, wherein the at least one nonionic amphiphilic associative polyurethane of formula (I) is present in an amount of from 0.1 to 10 % by weight of active material relative to the total weight of the composition.

31. The composition according to claim 30, wherein the at least one nonionic amphiphilic associative polyurethane of formula (I) is present in an amount of from 0.5 to 5 % by weight of active material relative to the total weight of the composition.

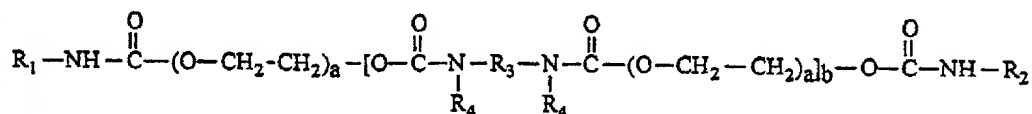
32. The composition according to claim 16, wherein the at least one anionic polymer comprising at least one unit derived from a fatty-chain monomer is present in an amount of from 0.01 to 10 % by weight of active material relative to the total weight of the composition.

33. The composition according to claim 32, wherein the at least one anionic polymer comprising at least one fatty-chain monomer unit is present in an amount of from 0.1 to 5% by weight of active material relative to the total weight of the composition.

34. The composition according to claim 16, wherein the weight ratio of the nonionic amphiphilic associative polyurethane of formula (I) and the anionic polymer comprising at least one fatty-chain monomer unit ranges from about 90/10 to 10/90.

35. A leave-in haircare gel or styling gel comprising, in a cosmetically acceptable medium:

(A) at least one nonionic amphiphilic associative polyurethane corresponding to formula (I):



(I)

in which

one of the radicals  $\text{R}_1$  and  $\text{R}_2$  is an alkyl group having 8 to 18 carbons and the other group is an alkyl group having 1 to 6 carbons,

$\text{R}_3$  is a hydrocarbon-based radical having from 4 to 36 carbons,

$\text{R}_4$  is chosen from hydrogen and  $\text{C}_1$ - $\text{C}_6$  alkyl radicals,

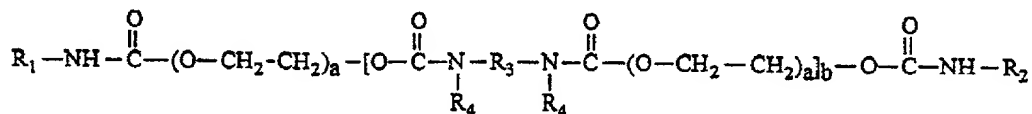
a ranges, independently, from 90 to 600, and

b ranges from 1 to 4, and

(B) at least one anionic polymer comprising at least one fatty-chain monomer unit.

36. A process of thickening a cosmetic composition comprising adding to said composition:

(A) at least one nonionic amphiphilic associative polyurethane corresponding to formula (I):



(I)

in which

one of the radicals  $R_1$  and  $R_2$  is an alkyl group having 8 to 18 carbons and the other group is an alkyl group having 1 to 6 carbons,

$R_3$  is a hydrocarbon-based radical having from 4 to 36 carbons,

$R_4$  is a hydrogen atom or a  $C_1-C_6$  alkyl radical,

a ranges, independently, from 90 to 600, and

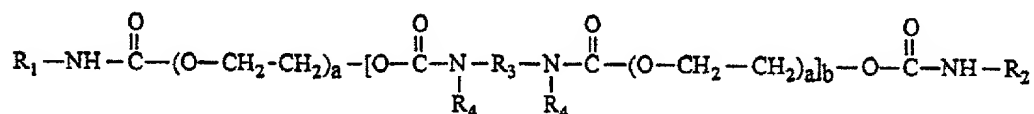
b is from 1 to 4, and

(B) at least one anionic polymer comprising at least one fatty-chain monomer unit

wherein (A) and (B) are added in a combined amount effective to thicken said composition.

37. A process for treating hair comprising applying to said hair composition comprising, in a cosmetically acceptable medium:

(A) at least one nonionic amphiphilic associative polyurethane corresponding to formula (I):



(I)

in which

one of the radicals  $R_1$  and  $R_2$  is an alkyl group having 8 to 18 carbons and the other group is an alkyl group having 1 to 6 carbons,

$R_3$  is a hydrocarbon-based radical having from 4 to 36 carbons,

$R_4$  is chosen from hydrogen and  $C_1$ - $C_6$  alkyl radicals,

a ranges, independently, from 90 to 600, and

b ranges from 1 to 4, and

(B) at least one anionic polymer comprising at least one fatty-chain monomer unit

and drying the hair without rinsing said composition from the hair.--

#### REMARKS

Claims 1 to 15 have been canceled and replaced by new claims 16 to 37.

Support for these new claims can be found in the original specification and claims.

Care has been taken so that no new matter has been added. Applicant now awaits an action on the merits.

Attorney Docket No. 5725.0481-00  
Serial No. NOT YET ASSIGNED

Please grant any extensions and charge any additional required fees to our  
deposit account 06-0916 if necessary.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,  
GARRETT & DUNNER, L.L.P.

By: Rachel H. Townsend  
Rachel H. Townsend  
Reg. No. 41,443

Dated: October 12, 1999

5725.0481-00

Cosmetic composition based on associative polyurethanes  
and fatty-chain anionic polymers

The present invention relates to cosmetic  
5 compositions containing a novel system for thickening  
aqueous media based on associative polyurethanes and  
fatty-chain anionic polymers, as well as to their use  
as leave-in haircare gels or styling gels.

The thickening and/or gelation of aqueous  
10 media with polymers has been an important subject of  
cosmetic research for a long time. The production of an  
advantageous thickening effect with a water-soluble  
polymer generally assumes a high molar mass and a large  
hydrodynamic volume. The gelation of an aqueous medium  
15 is thus considered as the result of a three-dimensional  
polymer network obtained by crosslinking linear  
polymers or by copolymerizing bifunctional and  
polyfunctional monomers. However, the use of such  
polymers of very high molar mass poses a certain number  
20 of problems, such as the relatively unpleasant texture  
and the difficulty in spreading the gels obtained.

One advantageous approach consisted in using,  
as thickeners, polymers capable of reversibly  
associating with each other or with other molecules or  
25 particles. This physical association gives rise to  
thixotropic or rheofluidizing macromolecular systems,

i.e. systems whose viscosity depends on the shear forces to which they are subjected.

Such polymers capable of reversibly associating with each other or with other molecules are known as "associative polymers". The interaction forces in play can be of very different nature, for example of electrostatic nature, of hydrogen-bond type or hydrophobic interactions.

One specific case of associative polymers is amphiphilic polymers, i.e. polymers comprising one or more hydrophilic portions which make them soluble in water, and one or more hydrophobic zones via which the polymers interact and assemble with each other or with other molecules.

It is known practice to prepare hair compositions in gel form using, as thickening system, such associative amphiphilic polymers, in conjunction with surfactants. It is thought that the advantageous rheological properties of the gels thus obtained are due to the formation of mixed micelles containing the surfactants and the hydrophobic portions of the amphiphilic polymers, these micelles constituting a multitude of physical crosslinking points.

However, these compositions based on associative polymers and surfactants do not always have the desired cosmetic properties. Thus, the presence of surfactants, even in small amounts, can adversely modify the cosmetic properties of the said

compositions, such as the properties of application or of feel after drying. Moreover, in particular in the sector of leave-in care gels or styling gels, it is important to be able to distribute the product  
5 uniformly over the entire head of hair so as to avoid the overloads and the cosmetic defects resulting therefrom.

European patent application EP-A-0,412,705 describes cosmetic compositions, in particular cosmetic  
10 hair compositions, using, as thickening system, nonionic water-soluble polymers modified by introduction of fatty chains, in combination with one or more natural or synthetic water-soluble polymers.

French patent application FR-A-2,733,910  
15 discloses compositions for styling mousses containing, in combination, at least one anionic polymer and at least one associative polyurethane, at least one of these two polymers having foaming power, so as to improve the properties of the mousses obtained.

20 It has now been discovered that it is possible to obtain a good thickening, or even gelling, effect and advantageous cosmetic properties by combining associative amphiphilic polyurethanes with anionic polymers comprising at least one fatty-chain  
25 monomer unit.

The gel obtained by combining these two types of polymer has a very creamy texture and is pleasant to apply. The final feel on dried hair is more pleasant

and less laden. The gel moreover has excellent styling power.

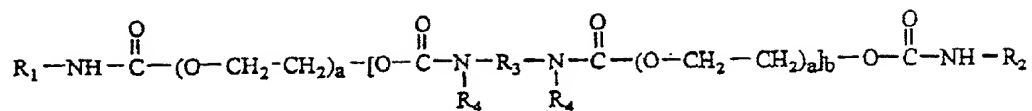
One subject of the present invention is thus a cosmetic composition comprising at least one nonionic  
5 associative polyurethane in combination with at least one anionic polymer comprising at least one fatty-chain monomer unit.

Another subject of the present invention is the use of the combination of at least one nonionic  
10 associative polyurethane and at least one anionic polymer comprising at least one fatty-chain monomer unit, as a thickening system for cosmetic compositions.

A third subject of the invention is a cosmetic process for treating the hair using a cosmetic  
15 composition obtained by combining at least one nonionic associative polyurethane and at least one anionic polymer comprising at least one fatty-chain monomer unit.

Other subjects will become apparent on  
20 reading the description and the examples which follow.

The cosmetic compositions in accordance with the invention are essentially characterized in that they contain, in a cosmetically acceptable medium,  
(A) at least one amphiphilic nonionic associative  
25 polyurethane corresponding to the general formula



(I)

in which

one of the residues  $R_1$  and  $R_2$  represents a higher  $C_8-C_{18}$  alkyl group and the other represents a lower  $C_1-C_6$  alkyl group,

$R_3$  represents a  $C_4-C_{36}$ , preferably  $C_6-C_{10}$ , hydrocarbon-based radical,

$R_4$  represents a hydrogen atom or a  $C_1-C_6$  alkyl radical, preferably a hydrogen atom,

a ranges, independently, from 90 to 600, and  
b is from 1 to 4, and

(B) at least one anionic polymer comprising at least one fatty-chain monomer unit.

According to the invention, the expression  
"lower  $C_1-C_6$  alkyl group" means an alkyl group containing a linear or branched chain comprising from 1 to 6 carbon atoms, such as methyl, ethyl, n-propyl, n-butyl, n-pentyl and n-hexyl radicals, as well as the corresponding branched isomers.

In accordance with the invention, the higher  $C_8-C_{18}$  alkyl groups denote alkyl groups containing a linear or branched chain comprising from 8 to 18 carbon atoms, such as octyl, nonyl, decyl, undecyl, dodecyl,

tridecyl, tetradecyl, pentadecyl, hexadecyl, heptadecyl and octadecyl radicals.

In one preferred embodiment, one of the alkyl radicals  $R_1$  and  $R_2$  in an  $\alpha$ - $\omega$  position represents an octadecyl group and the other represents a methyl group. The associative polyurethanes used in the compositions of the present invention are used in the form of an aqueous suspension or solution optionally containing a certain amount of soluble starch. This starch can be any starch extracted from natural sources, such as wheat starch, corn starch, rice starch, potato starch, etc., and which has been chemically, enzymatically or microbiologically modified so as to be soluble in water.

A preferred polymer is sold by the company Rohm & Haas under the name Acrysol 46. It is a polyurethane obtained by coupling hexamethylene diisocyanate and polyethylene glycol, and bearing at its ends, respectively, on average one methyl residue and one octadecyl residue. This polymer is in the form of an aqueous solution containing 15% by weight of active polyurethane material and also containing 3-5% of an enzymatically modified starch matrix.

The fatty-chain anionic polymers of the present invention constituting the component (B) are, in particular, polymers comprising units derived from carboxylic acids, from phosphonic acids or from

sulphonic acids, and at least one unit bearing a fatty chain.

The anionic groups are chosen, for example, from groups derived from carboxylic acids, such as  
5 acrylic acid, methacrylic acid, crotonic acid, maleic acid, fumaric acid or itaconic acid, sulphonic acids, such as vinylsulphonic acid or styrenesulphonic acid, or phosphonic acids, such as vinylphosphonic acid or styrenephosphonic acid.

10 The fatty-chain anionic polymers of the present invention can also contain one or more nonionic units that are well known in the art, for example units derived from vinyl, olefinic, styrene, acrylic or methacrylic monomers. Examples of such monomers which  
15 may be mentioned are ethylene, propylene, styrene, vinyl acetate and alkyl acrylates and methacrylates.

The fatty chains are linear or branched  $C_8-C_{22}$  alkyl groups. They can be derived from monomers such as  $C_8-C_{22}$  alkyl acrylates or methacrylates or vinyl esters  
20 of higher  $C_8-C_{22}$  fatty acids.

The fatty-chain anionic polymers of the present invention can be prepared by copolymerizing anionic monomers and monomers comprising at least one fatty chain, and optionally nonionic monomers. It may  
25 also be envisaged to prepare them by introducing the anionic groups and the fatty chains by grafting or chemical modification of natural or synthetic polymers.

Examples of preferred anionic polymers of the present invention which may be mentioned are terpolymers of acrylic acid, vinylpyrrolidone and C<sub>8</sub>-C<sub>18</sub> alkyl methacrylate, for example lauryl methacrylate, such as the product sold under the name Acrylidone LM by the company ISP; terpolymers of vinyl acetate, monoisobutyl maleate and a C<sub>10</sub>-C<sub>20</sub> vinyl alkanoate, for example vinyl neodecanoate, such as the product sold under the name Meypro-Fix 509 by the company Rhône Poulenc Surfactants; and the terpolymers of vinyl acetate, of crotonic acid and of a C<sub>10</sub>-C<sub>20</sub> vinyl alkanoate, for example vinyl neodecanoate, such as the product sold under the name National 28-2930 by the company National Starch.

According to the invention, the associative polyurethanes and the fatty-chain polymers are used in amounts which are sufficient to obtain satisfactory thickening or gelation of the aqueous medium.

An amount of associative polyurethanes of between 0.1 and 10% by weight, and preferably between 0.5 and 5% by weight, expressed as active material and relative to the total weight of the composition, is recommended in particular.

In the compositions of the present invention, the anionic polymers comprising at least one fatty chain are present in a proportion of from 0.01 to 10% by weight, preferably in a proportion of from 0.1 to 5%

by weight, of active material relative to the total weight of the composition.

In the present invention, the ratio of the said nonionic associative polyurethane (A) of formula (I) to the said anionic polymer comprising at least one fatty-chain monomer unit (B) is preferably within the range from 90/10 to 10/90.

The cosmetically acceptable medium preferably consists of water and can also contain cosmetically acceptable solvents, for example lower monoalcohols such as ethanol or isopropanol, glycols such as diethylene glycol, glycol ethers such as ethylene glycol alkyl ether or diethylene glycol alkyl ether, or alternatively fatty acid esters, all these solvents being used alone or in the form of a mixture.

The haircare or styling gels can also contain one or more additives commonly used in such hair compositions. Examples which may be mentioned are fragrances, dyes, preserving agents, sunscreens, vitamins, pH regulators, etc. It is clearly understood that the choice of these compounds should take into account any interactions with the thickening system. A person skilled in the art will take care to ensure that the addition of these additives will not have an unfavourable effect on the advantageous properties of the compositions obtained by virtue of the present invention.

A preferred cosmetic process for treating the hair, according to the invention, consists in applying and uniformly distributing the compositions described above on the hair and in drying the hair thus treated  
5 without rinsing it.

The examples which follow are intended to illustrate the invention without thereby being limiting in nature.

10 **Example 1**

The aqueous compositions below are prepared:

Acrysol 46, a product sold by the company Rohm & Haas, a polyurethane obtained by coupling  
15 hexamethylene diisocyanate and polyethylene glycol, and bearing at its ends, respectively, on average one methyl residue and one octadecyl residue. The resin National 28-2930 sold by the company National Starch is an anionic terpolymer obtained by copolymerizing vinyl  
20 acetate, crotonic acid and vinyl neodecanoate.

This example shows that the combination of the preferred associative polyurethane of the present invention (Acrysol 46) and a fatty-chain anionic polymer (National 28-2930) makes it possible to obtain  
25 a gel which has excellent cosmetic properties. Hair treated with this composition A is easy to disentangle and feels smooth and supple.

It is noted that Acrysol 46 alone  
(composition B) has no appreciable thickening effect,  
let alone a gelling effect.

Composition A also has the advantage of being  
5 creamy and non-greasy and of not being sticky.

### Example 2

A care gel having the composition below was  
10 prepared:

Acrysol 46	2% active material
Acrylidone LM*	1% active material
2-Amino-2-methyl-1-propanol	qs neutralization
Fragrance, dye, preserving	
15 agent and demineralized water	qs 100 g

\*Acrylidone LM is an anionic terpolymer obtained by  
copolymerizing acrylic acid, vinylpyrrolidone and  
lauryl methacrylate (68/23/9%), sold by the company  
I.S.P.

20

### Example 3

A care gel having the composition below was  
prepared:

25 Acrysol 46	2% active material
Acrylidone LM	2% active material
2-Amino-2-methyl-1-propanol	qs neutralization
Fragrance, dye, preserving	

agent and demineralized water                    qs 100 g

### Example 4

5                   A care gel having the composition below was  
prepared:

Acrysol 46 3% active material

Meypro-Fix 509\* 2% active material

2-Amino-2-methyl-1-propanol                      qs neutralization

10    Fragrance, dye, preserving  
agent and demineralized water                    qs 100 g

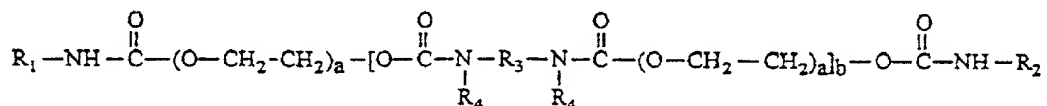
Meypro-Fix 509 is an anionic terpolymer of vinyl acetate, monoisobutyl maleate and vinyl neodecanoate.

15 sold by the company Rhône-Poulenc Surfactants.

It is clearly understood that the description hereinabove has been given for purely illustrative purposes and without any limitation being implied, and that variants or modifications may be made in the context of the present invention.

CLAIMS

1. Cosmetic composition, characterized in that it comprises, in a cosmetically acceptable medium,
- 5 (A) at least one amphiphilic nonionic associative polyurethane corresponding to the general formula



(I)

in which

- 10 one of the residues  $R_1$  and  $R_2$  represents a higher  $C_8-C_{18}$  alkyl group and the other represents a lower  $C_1-C_6$  alkyl group,
- $R_3$  represents a  $C_4-C_{36}$ , preferably  $C_6-C_{10}$ , hydrocarbon-based radical,
- 15  $R_4$  represents a hydrogen atom or a  $C_1-C_6$  alkyl radical, preferably a hydrogen atom,
- $a$  ranges, independently, from 90 to 600, and
- $b$  is from 1 to 4, and
- (B) at least one anionic polymer comprising at least
- 20 one unit derived from a fatty-chain monomer.

2. Cosmetic composition according to Claim 1, characterized in that the component (A) is a nonionic associative polyurethane in which, on average,

one of the radicals  $R_1$  and  $R_2$  in an  $\alpha$ - $\omega$  position represents an octadecyl group and the other represents a methyl group.

3. Cosmetic composition according to Claim  
5 1 or 2, characterized in that the component (A) is in the form of a solution or suspension in water also containing chemically, enzymatically or microbiologically modified soluble starch.

4. Cosmetic composition according to either  
10 of Claims 1 and 2, characterized in that the polymers constituting the component (B) comprise units derived from carboxylic acids, from phosphonic acids or from sulphonic acids, and at least one unit bearing a fatty chain.

15 5. Composition according to Claim 4, characterized in that the anionic groups are chosen from groups derived from carboxylic acids, such as acrylic acid, methacrylic acid, crotonic acid, maleic acid, fumaric acid or itaconic acid, groups derived  
20 from sulphonic acids, such as vinylsulphonic acid or styrenesulphonic acid, and groups derived from phosphonic acids, such as vinylphosphonic acid or styrenephosphonic acid.

6. Composition according to any one of  
25 Claims 1 to 5, characterized in that the units comprising a fatty chain are derived from monomers

comprising at least one linear or branched C<sub>8</sub>-C<sub>22</sub> alkyl chain.

7. Composition according to Claim 6, characterized in that the said monomer bearing at least one alkyl chain is chosen from C<sub>8</sub>-C<sub>22</sub> alkyl acrylates or methacrylates or vinyl esters of higher C<sub>8</sub>-C<sub>22</sub> fatty acids.

8. Composition according to any one of Claims 1 to 7, characterized in that the said fatty-chain anionic polymers also contain nonionic units.

9. Composition according to Claim 8, characterized in that the said nonionic units are derived from vinyl, olefinic, styrene, acrylic or methacrylic monomers.

10. Composition according to any one of Claims 1 to 9, characterized in that it contains the component (A) in a proportion of from 0.1 to 10% by weight, and preferably from 0.5 to 5% by weight, expressed as active material relative to the total weight of the composition.

11. Composition according to any one of Claims 1 to 10, characterized in that it contains the component (B) in a proportion of from 0.01 to 10% by weight, preferably in a proportion of from 0.1 to 5% by weight, of active material relative to the total weight of the composition.

12. Composition according to any one of Claims 1 to 11, characterized in that the weight ratio of the said nonionic associative polyurethane of formula (I) to the said anionic polymer comprising at least one fatty-chain monomer unit is within the range from 90/10 to 10/90.

13. Composition according to any one of Claims 1 to 12, characterized in that it is in the form of a leave-in haircare gel or styling gel.

10 14. Use of the combination of a nonionic associative polyurethane of formula (I) and an anionic polymer comprising at least one fatty chain, as a system for thickening a cosmetic composition.

15 15. Cosmetic process for treating the hair, characterized in that the composition defined according to any one of Claims 1 to 13 is applied to the hair and the hair thus treated is dried without rinsing it.

**French Language Declaration**

POUVOIRS: En tant que l'inventeur cité, je désigne par la présente l'(les) avocat(s) et/ou agent(s) suivant(s) pour qu'ils poursuive(nt) la procédure de cette demande de brevet et traite(nt) toute affaire s'y rapportant avec L'Office des brevets et des marques: (mentionner le nom et le numéro d'enregistrement).

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this patent application and transact all business in the Patent and Trademark Office connected therewith: (list name and registration number):

**FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, L.L.P., Reg. No. 22,540**, Douglas B. Henderson, Reg. No. 20,291; Ford F. Farabow, Jr., Reg. No. 20,630; Arthur S. Garrett, Reg. No. 20,338; Donald R. Dunner, Reg. No. 19,073; Brian G. Brunsvold, Reg. No. 22,593; Tipton D. Jennings, IV, Reg. No. 20,645; Jerry D. Voight, Reg. No. 23,020; Laurence R. Hefter, Reg. No. 20,827; Kenneth E. Payne, Reg. No. 23,098; Herbert H. Mintz, Reg. No. 26,691; C. Larry O'Rourke, Reg. No. 26,014; Albert J. Santorelli, Reg. No. 22,610; Michael C. Elmer, Reg. No. 25,857; Richard H. Smith, Reg. No. 20,609; Stephen L. Peterson, Reg. No. 26,325; John M. Romary, Reg. No. 26,331; Bruce C. Zotter, Reg. No. 27,680; Dennis P. O'Reilly, Reg. No. 27,932; Allen M. Sokal, Reg. No. 26,695; Robert D. Bajefsky, Reg. No. 25,387; Richard L. Stroup, Reg. No. 28,478; David W. Hill, Reg. No. 28,220; Thomas L. Irving, Reg. No. 28,619; Charles E. Lipsey, Reg. No. 28,165; Thomas W. Winland, Reg. No. 27,605; Basil J. Lewis, Reg. No. 28,818; Martin I. Fuchs, Reg. No. 28,508; E. Robert Yoches, Reg. No. 30,120; Barry W. Graham, Reg. No. 29,924; Susan Haberman Griffen, Reg. No. 30,907; Richard B. Racine, Reg. No. 30,415; Thomas H. Jenkins, Reg. No. 30,857; Robert E. Converse, Jr., Reg. No. 27,432; Clair X. Mullen, Jr., Reg. No. 20,348; Christopher P. Foley, Reg. No. 31,354; John C. Paul, Reg. No. 30,413; Roger D. Taylor, Reg. No. 28,992; David M. Kelly, Reg. No. 30,953; Kenneth J. Meyers, Reg. No. 25,146; Carol P. Einaudi, Reg. No. 32,220; Walter Y. Boyd, Jr., Reg. No. 31,738; Steven M. Anzalone, Reg. No. 32,095; Jean B. Fordis, Reg. No. 32,984; Barbara C. McCurdy, Reg. No. 32,120; James K. Hammond, Reg. No. 31,964; Richard V. Burgujian, Reg. No. 31,744; J. Michael Jakes, Reg. No. 32,824; Dirk D. Thomas, Reg. No. 32,600; Thomas W. Banks, Reg. No. 32,719; Christopher P. Isaac, Reg. No. 32,616; Bryan C. Diner, Reg. No. 32,409; M. Paul Barker, Reg. No. 32,013; Andrew Chanho Sonu, Reg. No. 33,457; David S. Forman, Reg. No. 33,694; Vincent P. Kovalick, Reg. No. 32,867; James W. Edmondson, Reg. No. 33,871; Michael R. McGurk, Reg. No. 32,045; Joann M. Neth, Reg. No. 36,363; Gerson S. Panitch, Reg. No. 33,751; Cheri M. Taylor, Reg. No. 33,216; Charles E. Van Horn, Reg. No. 40,266; Linda A. Wadler, Reg. No. 33,218; Jeffrey A. Berkowitz, Reg. No. 36,743; Michael R. Kelly, Reg. No. 33,921; and James B. Monroe, Reg. No. 33,971; **and Thalia V. Warnement, Reg. No. 39,064; Michele C. Bosch, Reg. No. 40,524; Allen R. Jensen, Reg. No. 28,224; Mark D. Sweet, Reg. No. 41,469; and Anthony M. Gutowski, Reg. No. 38,742.**

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(name and telephone number)

Thomas L. Irving, Reg. No. 28,619  
Telephone Number (202) 408-4082

**French Language Declaration**

Je revendique par le présent acte avoir la priorité étrangère, en vertu du Titre 35, § 119(a)-(d) ou § 365(b) du Code des Etats-Unis, sur toute demande étrangère de brevet ou certificat d'inventeur ou, en vertu du Titre 35, § 365(a) du même Code, sur toute demande internationale PCT désignant au moins un pays autre que les Etats-Unis et figurant ci-dessous et, en cochant la case, j'ai aussi indiqué ci-dessous toute demande étrangère de brevet, tout certificat d'inventeur ou toute demande internationale PCT ayant une date de dépôt précédant celle de la demande à propos de laquelle une priorité est revendiquée.

Prior foreign application(s)  
Demande(s) de brevet antérieure(s)

Priority Not Claimed  
Droit de priorité non revendiqué

98/1.774                      France  
(Number)                      (Country)  
(N° méro)                      (Pays)

13 February 1998                      ☐  
(Day/Month/Year Filed)  
(Jour/Mois/Anné de dépôt)

nber)                      (Country)  
néro)                      (Pays)

(Day/Month/Year Filed)                      ☐  
(Jour/Mois/Anné de dépôt)

Je revendique par le présent acte tout bénéfice, en vertu du Titre 35, 9(e) du Code des Etats-Unis, de toute demande de brevet provisoire effectuée aux Etats-Unis et figurant ci-dessous.

Application No.)                      (Filing Date)  
de demande)                      (Date de dépôt)

Application No.)                      (Filing Date)  
de demande)                      (Date de dépôt)

Je revendique par le présent acte tout bénéfice, en vertu du Titre 35, du Code des Etats-Unis, de toute demande de brevet effectuée aux Etats-Unis, ou en vertu du Titre 35, § 365(c) du même Code, de toute demande internationale PCT désignant les Etats-Unis et figurant sous et, dans la mesure où l'objet de chacune des revendications de cette demande de brevet n'est pas divulgué dans la demande antérieure américaine ou internationale PCT, en vertu des dispositions du premier paragraphe du Titre 35, § 112 du Code des Etats-Unis, je reconnais devoir divulguer toute information pertinente sur la nouveauté, la nouveauté, comme défini dans le Titre 37, § 1.56 du Code des règlements, dont laquelle est devenue disponible à la date de dépôt de la demande antérieure, et la date de dépôt de la demande nationale ou internationale PCT de la présente demande:

I hereby claim the benefit under Title 35, United States Code, § 119(e) of any United States provisional application(s) listed below.

I hereby claim the benefit under Title 35, United States Code, § 120 of any United States application(s), or § 365(c) of any PCT International Application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International Application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose any or all information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application.

Application No.)                      (Filing Date)  
(N° de demande)                      (Date de dépôt)

(Status) (patented, pending, abandoned)  
(Status) (breveté, en cours d'examen, abandonné)

(Application No.)                      (Filing Date)  
(N° de demande)                      (Date de dépôt)

(Status) (patented, pending, abandoned)  
(Status) (breveté, en cours d'examen, abandonné)

Je déclare par le présent acte que toute déclaration ci-incluse est, à ma connaissance, véridique et que toute déclaration formulée à partir de renseignements ou de suppositions est tenue pour véridique; et de plus, que toutes ces déclarations ont été formulées en sachant que toute fausse déclaration volontaire ou son équivalent est passible d'une amende ou d'une incarcération, ou des deux, en vertu de la Section 1001 du Titre 18 du Code des Etats-Unis, et que de telles déclarations volontairement fausses risquent de compromettre la validité de la demande de brevet ou du brevet délivré à partir de celle-ci.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

# Declaration and Power of Attorney for Patent Application

## Déclaration et Pouvoir pour Demand de Brevet

### French Language Declaration

En tant que l'inventeur nommé ci-après, je déclare par le présent acte que:

Mon domicile, mon adresse postale et ma nationalité sont ceux figurant ci-dessous à côté de mon nom.

Je suis être le premier inventeur original et unique (si un seul est mentionné ci-dessous), ou l'un des premiers co-inventeurs originaux (si plusieurs noms sont mentionnés ci-dessus) de l'objet revendiqué, pour lequel une demande de brevet a été déposée concernant l'invention intitulée

La description est fournie ci-joint à moins que la case ci-dessous n'ait été cochée:

a été déposée le \_\_\_\_\_  
sous le numéro de demande des Etats-Unis ou le  
numéro de demande international PCT  
\_\_\_\_\_ et modifiée  
\_\_\_\_\_ (les cas échéant).

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

COSMETIC COMPOSITION COMPRISING AT LEAST ONE NONIONIC AMPHIPHILIC ASSOCIATIVE POLYURETHANE AND AT LEAST ONE ANIONIC POLYMER WITH FATTY CHAINS (As Amended)

the specification of which is attached hereto unless the following box is checked:

☒ was filed on December 23, 1998 as United States Application Number or PCT International Application Number PCT/FR98/02863 and was amended on October 12, 1999 (if applicable).

Je déclare par le présent acte avoir passé en revue et compris le contenu de la description ci-dessus, revendications comprises, telles que modifiées par toute modification dont il aura été fait référence ci-dessus.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above

Je reconnais devoir divulguer toute information pertinente à la brevetabilité, comme défini dans le Titre 37, § 1.56 du Code fédéral des réglementations.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56.

Nom complet de l'unique ou premier inventeur: <i>CD</i>		Full name of sole or first inventor Christine DUPUIS	
Signature de l'inventeur	Date	Inventor's signature <i>X Christine Dupuis</i>	Date <i>X 29 Oct. 99</i>
Domicile	Residence 15, rue Sevestre, F-75018 Paris, France <i>FRX</i>		
Nationalité:	Citizenship French		
Adresse postale:	Post Office Address Same as residence		
Nom complet du second co-inventeur, le cas échéant:		Full name of second joint inventor, if any:	
Signature du second inventeur	Date	Second Inventor's signature	Date
Domicile:	Residence		
Nationalité:	Citizenship		
Adresse postale:	Post Office Address		
Nom complet du third co-inventeur, le cas échéant:		Full name of third joint inventor, if any:	
Signature d'inventeur	Date	Third Inventor's signature	Date
Domicile	Residence		
Nationalité:	Citizenship		
Adresse postale:	Post Office Address		

TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371		Attorney's Docket Number: 05725.0481-00000
		U.S. Application No.: 09/402,796
International Application No.: PCT/FR98/02863	International Filing Date: December 23, 1998	Priority Date Claimed: February 13, 1998

**Title of Invention:** COSMETIC COMPOSITION COMPRISING AT LEAST ONE NONIONIC AMPHIPHILIC ASSOCIATIVE POLYURETHANE AND AT LEAST ONE ANIONIC POLYMER WITH FATTY CHAINS

**Applicant(s) For DO/EO/US:** Christine DUPUIS

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☐ This is a FIRST submission of items concerning a filing under 35 U.S.C. 371.
2. ☒ This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371.
- ☐ This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(I).
- ☐ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
- ☐ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
  - a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
  - b. ☐ has been transmitted by the International Bureau.
  - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
- ☐ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
- ☐ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3)).
  - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
  - b. ☐ have been transmitted by the International Bureau.
  - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
  - d. ☐ have not been made and will not be made.
8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. below concern other document(s) or information included:

11. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☒ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☐ A FIRST preliminary amendment.
- ☐ A SECOND or SUBSEQUENT preliminary amendment.
14. ☐ A substitute specification.
15. ☐ A change of power of attorney and/or address letter.
16. ☐ Other items or information:
  - a. ☐ Verified Small Entity Statement.
  - b. ☐ Copy of Notification of Missing Requirements.

12/23/1999 PVOLPE 00000158 09402796

01 FC:154

130.00 DP

U.S. APPLICATION NO.:  
09/402,796

INTERNATIONAL APPLICATION NO.:  
PCT/FR98/02863

ATTORNEY DOCKET NO.:  
05725.0481-00000

				CALCULATIONS
17. <input type="checkbox"/> The following fees are submitted:				
<b>Basic National Fee (37 CFR 1.492(a)(1)-(5)):</b>				
Search Report has been prepared by the EPO or JPO . . . . . \$ 840.00				
International preliminary examination fee paid to USPTO (37 CFR 1.482) . . . . . \$ 670.00				
No international preliminary examination fee paid to USPTO (37 CFR 1.482) but international search fee paid to USPTO (37 CFR 1.445(a)(2)) . . . . . \$ 760.00				
Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO . . . . . \$ 970.00				
International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(1)-(4) . . . . . \$ 96.00				
<b>ENTER APPROPRIATE BASIC FEE AMOUNT ==</b>				\$
charge of \$130.00 for furnishing the oath or declaration later than <input checked="" type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(e)).				\$ 130.00
Claims	Number Filed	Number Extra	Rate	
Independent Claims	- 20=		X \$18.00	\$
Dependent Claims	- 3=		X \$78.00	\$
Multiple dependent claim(s) (if applicable)			+ \$260.00	\$
<b>TOTAL OF ABOVE CALCULATIONS ==</b>				\$ 130.00
Reduction by 1/2 for filing by small entity, if applicable. Verified Small Entity statement must be filed. (Note 37 CFR 1.9, 1.27, 1.28).				\$
<b>SUBTOTAL ==</b>				\$ 130.00
Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(f)).				\$
<b>TOTAL NATIONAL FEE ==</b>				\$ 130.00
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property				\$ 40.00
<b>TOTAL FEES ENCLOSED ==</b>				\$ 170.00
Amount to be refunded				\$
Charged				\$

- a. ☒ A check in the amount of \$ 130.00 to cover the surcharge fee and a check in the amount of \$ 40.00 to cover the Assignment recordation fee are enclosed.
- b. ☐ Please charge our Deposit Account No. 06-0916 in the amount of \$\_\_\_\_\_ to cover the above fees. A duplicate copy of this sheet is enclosed.
- c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 06-0916. A duplicate copy of this sheet is enclosed.

**U.S. APPLICATION NO.**

09/402,796

**INTERNATIONAL APPLICATION NO.:**

PCT/FR98/02863

**ATTORNEY DOCKET NO.:**

05725.0481-00000

The Commissioner is hereby authorized to charge any other fees due under 37 C.F.R. §1.16 or §1.17 during the pendency of this application to our Deposit Account No. 06-0916.

**SEND ALL CORRESPONDENCE TO:**

Finnegan, Henderson, Farabow

Garrett & Dunner, L.L.P.

1300 I Street, N.W.

Washington, D.C. 20005-3315



Michele C. Bosch

Reg. No. 40,524

Submitted: December 22, 1999

RECEIVED 12/22/99